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(54) Hard film and hard film coated tool

(57) A hard film formed by an arc-discharge ion-plating method, having a composition comprising metal components represented by  $Al_xCr_{1-x}Si_y$ , wherein  $x$  and  $y$  are respectively atomic ratios meeting  $0.45 \leq x \leq 0.75$ ,  $0 \leq y \leq 0.35$ , and  $0.5 \leq x + y < 1$ , and non-metal components represented by  $N_{1-\alpha-\beta-\gamma}B_\alpha C_\beta O_\gamma$ , wherein  $\alpha$ ,  $\beta$  and  $\gamma$  are respectively atomic ratios meeting  $0 \leq \alpha \leq 0.15$ ,  $0$

$\leq \beta \leq 0.35$ , and  $0.003 \leq \gamma \leq 0.25$ , the hard film having an NaCl-type crystal structure, with a half width of  $2\theta$  at an X-ray diffraction peak corresponding to a (111) face or a (200) face being  $0.5-2.0^\circ$ , and the hard film containing oxygen more in grain boundaries than in crystal grains.

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# EUROPEAN SEARCH REPORT

Application Number  
EP 03 02 6508

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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 17 June 2004	Examiner Ekhuft, H
<p><b>CATEGORY OF CITED DOCUMENTS</b></p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date O : document cited in the application L : document cited for other reasons &amp; : member of the same patent family, corresponding document</p>			

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# EUROPEAN SEARCH REPORT

Application Number  
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